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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,457	08/24/2001	Gorou Ikegami	NECN 18.947	3656

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KATTEN MUCHIN ZAVIS ROSENMAN
575 MADISON AVENUE
NEW YORK, NY 10022-2585

EXAMINER

LEWIS, MONICA

ART UNIT PAPER NUMBER

2822

DATE MAILED: 05/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/939,457

Applicant(s)

IKEGAMI ET AL.

Examiner

Monica Lewis

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 07 February 2003 is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This office action is in response to the amendment filed February 7, 2003.

Response to Arguments

2. Applicant's arguments with respect to claims 1-5 have been considered but are moot in view of the new ground(s) of rejection.

Information Disclosure Statement

3. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered (See Specification Page 2 Line 12).

Specification

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirano et al. (U.S. Publication No. 2002/0153618) in view of Hsuan et al. (U.S. Patent No. 6,323,546).

In regards to claim 1, Hirano et al. ("Hirano") discloses the following:

a) a semiconductor chip (7A) having a plurality of protruding electrodes on a front surface of said semiconductor chip (For Example: See Figure 3).

b) an insulator resin film (11) covering said semiconductor chip while exposing said film electrodes and a top portion of each of said protruding electrodes (For Example: See Figure 3); and

c) a conductive film formed on said top portion of said protruding electrodes and configured as a plurality of interconnect lines (For Example: See Figure 3).

In regards to claim 1, Hirano fails to disclose the following:

a) film electrodes on a rear surface of said chip.

However, Hsuan et al. ("Hsuan") discloses the use electrodes on the front and rear surface of a chip (For Example: See Figure 3). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Hirano to include the use electrodes on the front and rear surface of a chip as disclosed in Hsuan because it aids in reducing the signal transmitting path (For Example: See Column 1 Lines 56-67 and Column 2 Lines 1-12).

Additionally, since Hirano and Hsuan are both from the same field of endeavor, the purpose disclosed by Hsuan would have been recognized in the pertinent art of Hirano.

In regards to claim 2, Hirano discloses the following:

a) semiconductor chip is mounted on a printed circuit board, with said rear surface opposing said printed circuit board (For Example: See Figure 3).

In regards to claim 3, Hirano discloses the following:

a) interconnect lines are connected to respective terminals of the printed circuit board by wire bonding (For Example: See Figure 3).

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirano et al. (U.S. Publication No. 2002/0153618) in view of Hsuan et al. (U.S. Patent No. 6,323,546) and Akram et al. (U.S. Patent No. 6,493,229).

In regards to claim 4, Hirano discloses the following:

a) protruding electrodes has a base portion having a diameter larger than other portion thereof (For Example: See Figure 3).

In regards to claim 4, Hirano fails to disclose the following:

a) chip is sandwiched between a pair of printed circuit boards.

However, Akram et al. ("Akram") discloses printed circuit boards with a chip mounted between (For Example: See Figure 16). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Hirano to include printed circuit boards with a chip mounted between as disclosed in Akram because it aids in providing additional structural strength (For Example: See Column 9 Lines 35-37).

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirano et al. (U.S. Publication No. 2002/0153618) in view of Hsuan et al. (U.S. Patent No. 6,323,546) and Ohuchi et al. (U.S. Patent No. 5,999,413).

In regards to claim 5, Hirano discloses the following:

a) a portion of a side surface of said semiconductor chip is exposed from said insulator resin film.

However, Ohuchi et al. ("Ohuchi") discloses the use of an exposed side of a chip (For Example: See Figure 3b). It would have been obvious to one having ordinary skill in the art at

the time the invention was made to modify the semiconductor device of Hirano to include the use of an exposed side of a chip as disclosed in Ouchi because it aids in providing a place where signals can be input to external circuits (For Example: See Column 3 Lines 14-67 and Column 4 Lines 1-31).

Additionally, since Hirano and Ohuchi are both from the same field of endeavor, the purpose disclosed by Ohuchi would have been recognized in the pertinent art of Hirano.

Conclusion

9. The following prior art made of record and not relied upon is considered pertinent to applicant's disclosure: a) Rostoker (U.S. Patent No. 5,399,898) discloses a flip chip die; b) Patti (U.S. Patent No. 6,271,587) discloses a connection arrangement; c) Fujisawa et al. (U.S. Publication No. 2001/0015489) discloses a semiconductor device; d) McCormick et al. (U.S. Patent No. 6,369,448) discloses a flip chip package; e) Farooq et al. (U.S. Patent No. 6,489,686) discloses a discrete device.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica Lewis whose telephone number is 703-305-3743.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 703-308-4905. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722 for regular and after final

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communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

ML
April 30, 2003



AMIR ZARABIAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800